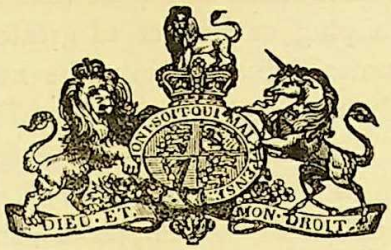

A.D. 1869, 9th DECEMBER. N° 3565.

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# Stoppering Bottles and Measuring Liquids.

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**LETTERS PATENT** to Charles Antonio M°Calla, of Northampton Street, Birmingham, in the County of Warwick, Engraver and Enameller, for the Invention of "IMPROVEMENTS IN CLOSING AND STOPPERING BOTTLES, TUBES, AND OTHER SUCH VESSELS, AND IN THE MEANS OF REGULATING AND MEASURING THE FLOW OF LIQUIDS FROM SUCH VESSELS."

Sealed the 3rd June 1870, and dated the 9th December 1869.

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**PROVISIONAL SPECIFICATION** left by the said Charles Antonio M°Calla at the Office of the Commissioners of Patents, with his Petition, on the 9th December 1869.

I, CHARLES ANTONIO M°CALLA, of Northampton Street, Birmingham, in the County of Warwick, Engraver and Enameller, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN CLOSING AND STOPPERING BOTTLES, TUBES, AND OTHER SUCH VESSELS, AND IN THE MEANS OF REGULATING AND MEASURING THE FLOW OF LIQUIDS FROM SUCH VESSELS," to be as follows:—

This Invention relates, first, to improvements in the stoppering or closing of bottles, tubes, and such like vessels or receptacles for fluids,

liquids, and essences, and of scents and other volatile bodies or materials, which have generally a plug or stopper of greater or lesser length of cork, glass, or other material inserted into the neck of the bottle, and projecting down thereinto so as to prevent the escape of the contents therefrom by means of the side fitting or circumferential contact of the cork or other stopper with the interior surface of the neck or throat of the bottle or other vessel; and, secondly, to and in the application of the said improvements for the purpose of enabling the fluid contents of bottles and such like vessels to be measured out in ascertained quantities without the aid of a separate measuring vessel, and to the counting or recording the number of measures so withdrawn.

These improvements consist in substituting a close fitting button valve, cover piece, or cap to the end or top of the bottle or other such vessel suitably mounted and held in its place securely by a spring, whilst it is raised and opened against the resistance of the spring by means of a lever to which the finger or thumb of the operator is applied. The valve may be faced, seated, or fitted like the ordinary button valve or the safety valve of a steam boiler, ("without wings"), or the stopper or valve may be slightly hollow or concave on its under side, and fit on to or over the end of the bottle neck, which latter form I prefer to employ for "smelling bottles" or bottles or tubes for containing volatile essences, salts, or scents, and they may be fitted with perforated caps, capsules, or covers, in which case the lever for operating the stopper should pass through a slot in the side thereof. The stopper piece or valve may be made of any suitable material, according to the purpose for which the vessel is to be used or to the nature of its contents.

For the purpose of measuring out the fluid contents of bottles and such like vessels in small quantities I form a shoulder, a ring, or a recess at a convenient part within the neck or in the shoulder of the bottle at such a distance from the top or from the under side of the stopper as will represent accurately and contain a given volume or measure of quantity, and by means of a rod or connection I fit and operate another valve, so that when the lower valve is opened the chamber or space between the valves may be filled or charged, and when it is closed the fluid contents between them (or filling the space) the upper valve or stopper may be opened and so much of the contents of the bottle may be discharged therefrom and the operation may be again repeated until

the bottle is emptied. Air may be admitted to and be expelled from the bottle neck through a small passage provided for that purpose.

For the purpose of counting and recording the number of measures withdrawn from the bottle I attach to the lever, by which the stopper is operated "a counter," consisting of a dial with a pointer set in motion by a train of wheels, or any other suitable instrument or apparatus for indicating the number of reciprocations of the valve or stopper lever.

By the first part of this Invention the "tops" or "caps" of "smelling bottles," scent tubes, and vinaigrette bottles need not be opened, withdrawn, or otherwise removed when in use. The stopper or valve instead of being opened by a lever extending outside the perforated cap or cover through a side slot therein may be raised or opened by means of a screw or by the turning of the outer or perforated cover or cap.

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SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Charles Antonio McCalla in the Great Seal Patent Office on the 9th June 1870.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, CHARLES ANTONIO McCALLA, of Northampton Street, Birmingham, in the County of Warwick, Engraver and Enameller, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Ninth day of December, in the year of our Lord One thousand eight hundred and sixty-nine, in the thirty-third year of Her reign, did, for Herself, Her heirs and successors give and grant unto me, the said Charles Antonio McCalla, Her special licence that I, the said Charles Antonio McCalla, my executors, administrators, and assigns, or such others as I, the said Charles Antonio McCalla, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN CLOSING AND STOPPERING BOTTLES, TUBES, AND OTHER SUCH VESSELS AND IN THE MEANS OF REGULATING AND MEASURING THE FLOW OF LIQUIDS FROM

SUCH VESSELS," upon the condition (amongst others) that I, the said Charles Antonio M°Calla, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Charles Antonio M°Calla, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, and the accompanying Sheet of Drawings.

This Invention relates, first, to improvements in the stoppering or closing of bottles, tubes, and such like vessels or receptacles for fluids, liquids, and essences, and for containing scents and other volatile bodies or materials from which the air has to be excluded, and which vessels have generally a plug or stopper (of greater or lesser length) of cork, glass, or other material inserted into the neck of the bottle and projecting down thereinto so as to prevent the escape of the contents therefrom by means of the side fitting or circumferential contact of the cork or other kind of stopper with the interior surface of the neck or throat of the bottle or other vessel, and, secondly, to and in the application of the said improvements to bottles, jars, and such like vessels, for the purpose of enabling their fluid contents to be measured out in ascertained quantities without the aid of a separate measuring vessel, and to the counting or recording the number of measures so withdrawn.

These improvements consist in substituting a close fitting button valve, cover piece, or cap, to the end or top of the bottle or other such vessel suitably mounted and held in place securely by a spring or equivalent means whilst it is raised and opened by means of a lever or projection to which the finger or thumb of the operator is applied. The valve may be faced, seated, or fitted like an ordinary button valve, or like the safety valve of a steam boiler (without wings), or the stopper or valve may be slightly hollow or concave on its under side and fit on to or over the end of the bottle neck, which latter form I prefer to employ for "smelling bottles," or bottles or tubes for containing volatile essence, salts, or scents, and they may be fitted with perforated caps, capsules, or

covers, in which case the lever for opening the stopper should pass through a slot in the side thereof. The stopper piece or valve may be made of any suitable material according to the purpose for which the vessel is to be used or to the nature of its contents.

For the purpose of measuring out the fluid contents of bottles and such like vessels in small quantities I form a shoulder, a ring, or a recess for receiving a valve at a convenient part within the neck or in the shoulder of the bottle at such a distance from the top or from the under side of the stopper as will represent accurately a given volume or measure of quantity, and I fit thereto and operate as herein-after described another valve, thus, when the lower valve is opened the chamber or space between the valves may be filled or charged, and the valve be then closed, and when it is closed the fluid contents are thus received between them, the upper valve or stopper may then be opened and so much of the contents of the bottle as is represented by the measuring chamber may be discharged therefrom, and the operation may be again repeated until the bottle is emptied. Air may be admitted to and be expelled from the bottle neck through a suitably small passage provided for that purpose.

For the purpose of counting and recording the number of measures withdrawn from the bottle I attach to the lever by which the stopper is operated "a counter," consisting of a dial or dials with a pointer set in motion by a train of wheels or any other suitable instrument or apparatus for indicating the number of reciprocations of the valve or stopper lever or other part of the apparatus or the mechanism by which the measuring chamber is kept closed.

By the first part of this Invention the "tops" or "caps" of "smelling bottles," scent tubes, and vinaigrette bottles need not be opened, withdrawn, or otherwise removed when in use, nor the stopper, plug, or corking piece be withdrawn from the neck of the bottle. The stopper or valve instead of being opened by a lever extending outside the perforated cap or cover through a set slot therein may be raised or opened by means of a screw or by the turning of the outer or perforated cover or cap by which the cap, cover, valve, or stopper plate can be raised without any direct application of the fingers to the plug, cork, or stopper piece. The mouth of the scent or other bottle may be either square or angled, and the cover piece, cover plate, or valve may be held down by

means of a coiled spring of steel wire, which I prefer, first, to coat with copper, then to coat with silver, and then to gild, to protect it from the action of acids or other active oxydizing influences. For bottles to be used for other purposes, and when the contents are not solvents of india-rubber and such like materials, the cap or cover may be held down or retained in its closed position by a vulcanised or other "gum elastic" band or spring piece. The mode of counteracting the force of the spring for the purpose of opening the cover may as before stated either be by means of a direct action upon a projecting lever or thumb piece, or by means of a screwing action of the perforated capsule or cover piece.

In fitting "dram bottles" and such like vessels in accordance with this Invention, I prefer in some cases to close the mouth with a flat plate-like hinged valve having the under side slightly coned, the lower valve fitted within the neck or in the shoulder of the bottle may be a flat button or coned valve and be held up against a shoulder by means of a spring or by being screwed up. When the chamber or measuring space in the neck of the bottle has to be filled, the cover is closed and fastened down, the bottom valve is then opened, and the fluid allowed to fill the measuring space or chamber, the bottom valve is then released and closes self-actingly where a spring is employed, or in some cases it is screwed up tight by an entire or partial turning of the spindle, either of which operations however can only be effected after the top cap or cover piece is perfectly closed. The action upon the counter or recording instrument may either be by or through the closing of the bottom valve or by or through the act of unfastening and prior to opening to the slightest extent the cap or cover piece. Thus opening the cap or cover piece even to the smallest extent to allow of the pouring out of the liquid must follow the counting and recording of the drams or withdrawings, and the closing of the cap or cover piece releases and resets the counter ready for being again acted upon. The bottom valve and the top cover are not open together except for the purpose of filling the vessel, to ensure this the closing of the bottom valve must at all times precede the unfastening and opening of the cover and the registering or recording may either be effected upon the closing of the bottom valve, or by the act of unfastening the cap or cover. The whole of the apparatus may be combined and connected together so as to be inserted completely into

or fitted to the bottle, jug, or other vessel, and when the discharge of the measured fluid is regulated by the turning or sliding past one another of two pierced discs or two "treblet drawn" tubes the slots or openings in which form a passage or passages. When the two are brought opposite or are made coincident, the act of turning the plate or tube operates the recording apparatus and thereupon the cap or cover is free to be removed and a portion of the contents of the vessel may then be discharged. Instead of applying the top valve and its mounting to the top of the bottle or jug, or to the bottle mouth and the lower valve, and its seating to the shoulder or lower part of the neck, each separately, the whole of the apparatus may be fitted to a tube or "socket piece" and be inserted into the neck of the bottle, to which it may be attached by cementing or otherwise, and the whole may thus readily be removed from one vessel and be applied to another.

Figures 1 to 6 inclusive relate to smelling bottles; Figure 1 being a side view, partly in section of a double tube, each end being fitted with a button valve cover and a perforated cap, the lever for opening the cover piece or valve being shown as projecting through the side and working in a slot.

Figure 2 is a plan of the upper end of Figure 1 with the perforated cap removed; Figure 3 is an end view of the lower end of Figure 1.

Figure 4 is a side view of a double scent tube, similarly fitted to Figure 1; the tube is of oval section; Figures 5 and 6 are end views of Figure 4, corresponding with the Figures 2 and 3; in Figure 5 a modification in the form and mounting of the spring is shewn. Instead of the forms of spring shewn a boxed coil spring or "snuffer spring" may be employed. Instead also of the mouth of the tubes being fitted with metal mounts, as shown in Figures 1 and 4, the valves or cover pieces may fit direct on to the end of the scent tube and be mounted within the perforated cap or capsule.

In Figures 7 to 15 inclusive various views of bottles, jars, and jugs fitted in accordance with this Invention are shewn by which the measuring of drams and the recording of the number thereof drawn from the vessel may be effected in the manner herein-before described. Figure 7 is a vertical section of a bottle neck fitted with measuring apparatus with the lower valve open; Figure 8 being a similar view showing the lower valve closed; Figure 9 is a plan view of Figures 7

and 8. The pressing down of the lower valve against the resistance of the spring leaves the "counter" in a condition to record the filling of the measuring chamber when the valve ascends and closes the lower part of the measuring chamber, and thereupon the top valve, cap, or cover may be opened and the liquor be poured forth, and when emptied and the cover is brought down and secured the lower valve may then be pressed down and opened as before to admit of a fresh charge or quantity being admitted. The spindle of the lower valve is guided top and bottom, the lower guide in the seating piece of the valve whilst at the upper end it works up and down in a cross bar. In addition to the spring pressure applied to the cap or cover to hold it down in its place, the locking or fastening thereof which may be effected by means of any convenient form of ketch prevents access to the contents until the fastening is withdrawn or removed, and it is during the withdrawal of the fastening and before the cover can be raised or opened that the action upon the "counter" is effected, such fastening being connected by means of a rod or link to the counter or registering apparatus, which being contained in a small close case may be fitted to the neck of the bottle or within the bow of the handle of a jug or jar. Figure 10 is a sectional view of the neck of a jug similarly fitted, the arrangement of the working parts of the apparatus being modified to allow of the opening and upward movement of the cap or cover operating the "counter" gear by means of the multiplying levers fitted on each side of the neck. Figure 11 is a plan of the cap or cover of the jug, and its fittings. Figure 12 is a sectional view of a jug fitted with a cap or cover applied to the end of a tube, to and within which are fitted the several parts of the apparatus as there shewn, the whole being inserted in the neck of the jug and secured. In this view the cover is not intended as a lid to be opened each time that portions of the contents have to be drawn off, but only for filling the jug or for giving access to the lower valve or parts of the apparatus contained within the tube, the contents are poured through the spout through a square or elongated hole, when the inner tube having a corresponding hole or opening is turned round so as to bring the two openings together. In this modification of the parts the inner tube cannot be turned until after the lower valve has been closed by reason of the difference in form between parts of the upper end of the valve rod, or in some cases I prefer to connect and operate the two parts so that when the lower valve is open or down a double cross fork fitted

upon the upper end of the valve spindle just under the bridge of the short inner tube is out of gear therewith, but upon the bottom valve being closed it comes into contact with the cross bar or bridge piece and the two may then be turned together, and on their being turned act upon the "counter" gear or register. In Figure 12 the button head of the valve rod works through the cross handle or milled button for turning the short inner tube, and the lever arm for acting upon the counter is fitted close under the cross handle. Neither the connecting rod or lever between it and the counter nor the counter are shewn. Figure 13 is a sectional view of the neck of an ordinary bottle fitted with the apparatus, the principal variation in which is that the bottom valve is opened and closed by screwing up or down by means of a quick thread screw, the spindle of the valve being in two lengths, the lower part being screwed and fitted into a nut in the cross bar or stay, whilst the upper portion passes through a stuffing box in the top cover and has a socket at its lower end fitting on to or taking into the upper end of the lower rod, the upper end of the upper portion where it passes through the top cover is of two diameters, or it may be of three diameters, so that when the lower valve has been securely closed the end of the forked lever for operating the counter is raised and this is done before the top cover can be set free and opened to the slightest extent, the shoulder on the upper end of the upper rod comes in contact with the forked end of the lever arm of the "counter" gear, and as the valve is screwed up causes it to move through a small arc and indicate and record the action, and the further movement of the lever arm through a greater arc upon the opening of the cover does not affect the "counter" gear as the connection or contact of the parts may either cease or the movement be otherwise made inoperative. Figures 14 and 15 are top views of Figures 12 and 13 respectively.

Figures 16 and 17 are internal views to an enlarged scale of "counters" or registering apparatus that may be applied in connection with the second part of my Invention, but I do not intend to claim these or any other mechanical contrivance for registering or recording as a part of my present Invention, and any convenient or suitable "counter" or "register" may be applied to the measuring apparatus constructed according to my Invention, and be operated during the unfastening or releasing of the cap or cover applied to the mouth or top of the bottle,

jug, or other vessel. The counter may be so constructed that it is "set" ready for action either by the closing of the lid, cap, or cover or by the opening of the lower valve, and by means of a spring, catch, or a detent which is instantaneously released or set free by the closing of the valve, or by the first act of unfastening the lid, cap, or cover and the step-by-step movement of the numbered disc or of the pointer or index upon the dial be produced each time by a spring, which spring has to be overcome or drawn back and the "counter" reset by hand through the closing of the lid, cap, or cover, or by the opening of the lower valve.

Although in some of the Figures illustrating the application of my Invention to the necks of bottles and jugs the bottom valve and the cross guide are shown unconnected, and as being separately fixed within the throat or neck, I prefer to connect them together and also with the seat or mouth ring, either by means of bands or by a tube, within which or to which the whole are connected so that they can be drawn out together.

In Figures 18 and 19 the plate or disc under the cap or cover of the bottle neck has curved slots or openings corresponding with similar ones in the cap or cover, by turning which the necessity for raising or opening up the cap or cover is avoided, and the liquid contents are poured out through either or both of these openings. The shutting (by raising) the lower valve is made to slightly raise the lever arm of the counter gear and release the detent, and one step or motion is communicated to the counter or register at each charging of the measure and closing of the bottom valve.

Having now described my Invention of improvements in closing and stoppering bottles, tubes, and other such vessels, and in the means of regulating and measuring the flow of liquids from such vessels, and illustrated generally in the accompanying Sheet of Drawings some of the modes or methods in which I prefer to apply my said Invention, I wish it to be understood that I make no claim for the several parts of the mechanism therein shown separately, as they are mostly old and well known, but what I claim is,—

First. Fitting scent bottles, tubes, vinaigrettes, and such like articles as herein described.

Secondly. The improvements in closing and stoppering bottles, tubes, and other such vessels herein described.

Thirdly. The apparatus herein described for regulating and measuring the flow of liquids from bottles, jugs, jars, and other similar vessels.

Fourthly. The mode or method herein described of mounting and fitting dram bottles and such like vessels for measuring, or measuring and recording the contents as discharged therefrom.

Fifthly. The apparatus herein described for measuring out the fluid contents of bottles, jugs, and other vessels in a series of separate and distinct operations, as herein described and set forth.

In witness whereof, I, the said Charles Antonio McCalla, have hereunto set my hand and seal, this Eighth day of June One thousand eight hundred and seventy.

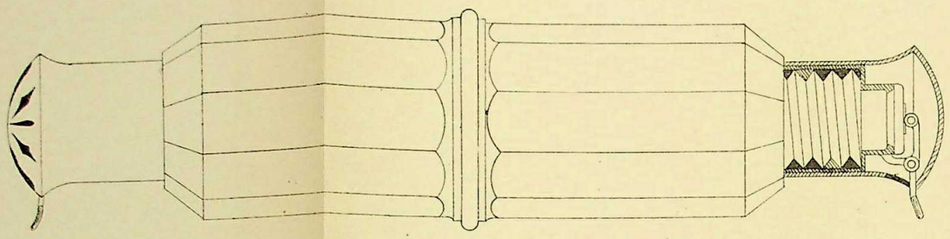
CHARLES ANTONIO McCALLA. (L.S.)

Witness,
GEORGE BAKER.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1870.

A.D. 1869. Dec 9. Nº 3565.
Mc CALLA'S Specification.

FIG. 1



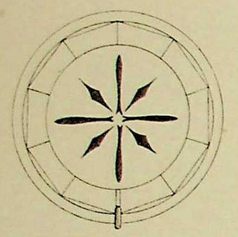


FIG. 2

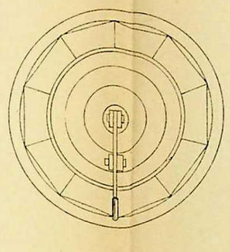
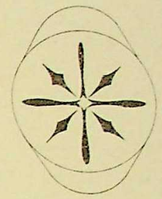


FIG. 3



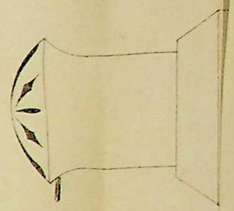


FIG. 5

FIG 7

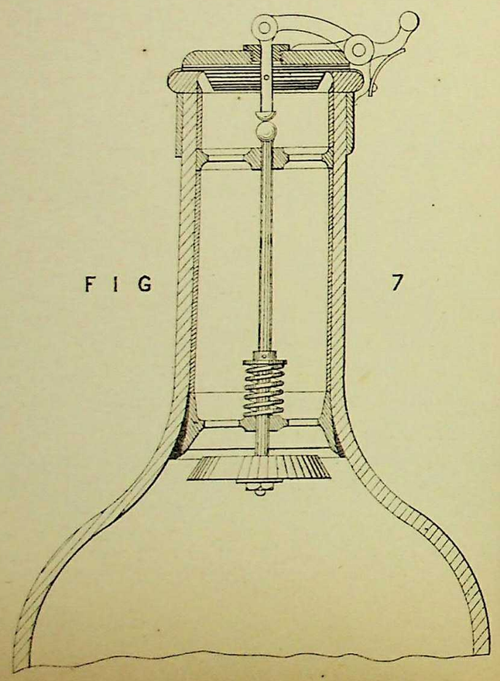


FIG 8

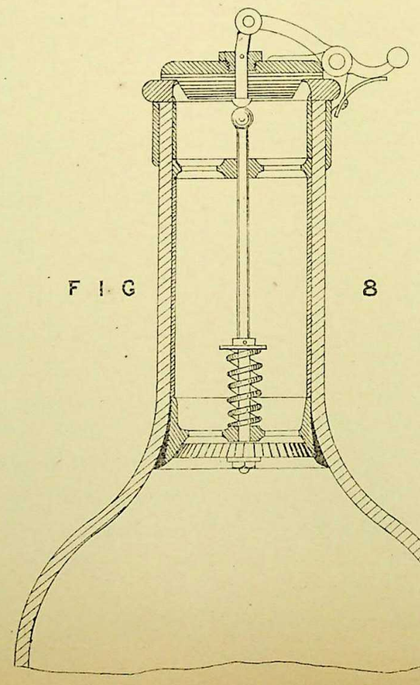
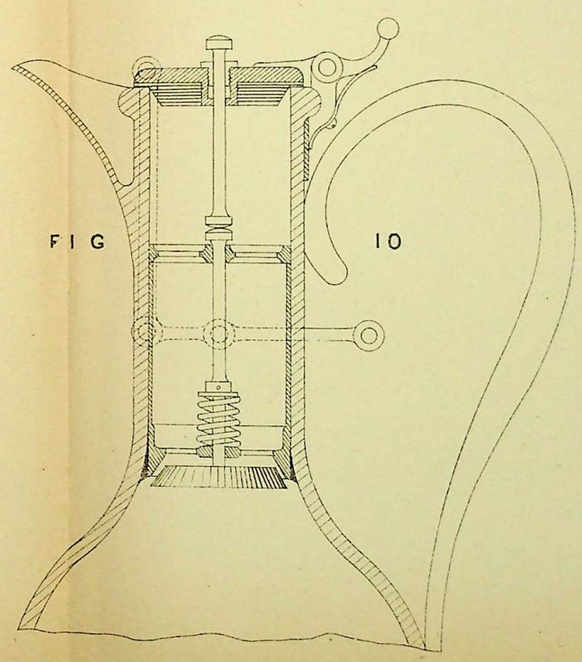


FIG 10



FIG

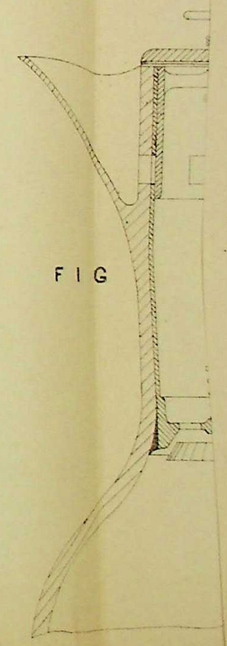
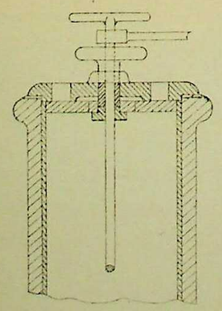


FIG. 16



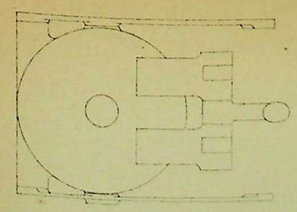
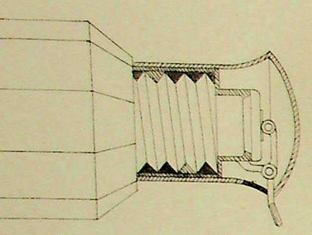


FIG. 11

FIG. 13

FIG. 15



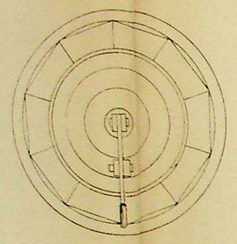


FIG. 3

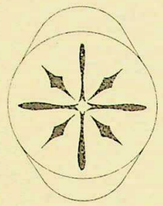
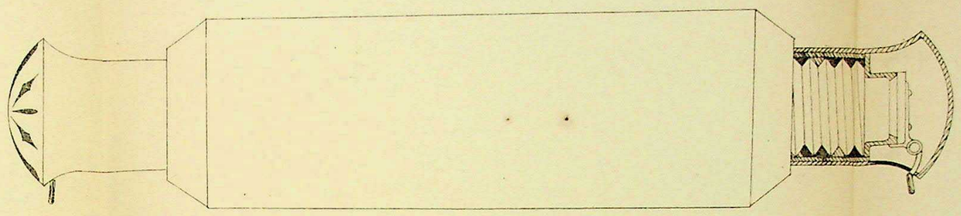


FIG. 5

FIG. 4



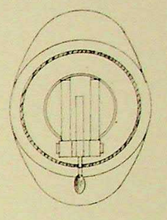
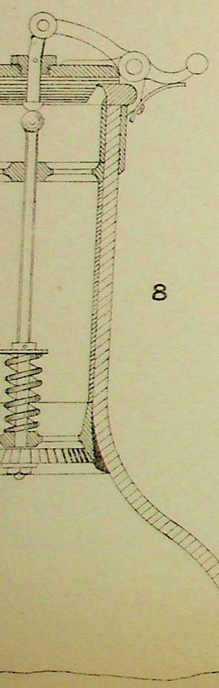


FIG. 6



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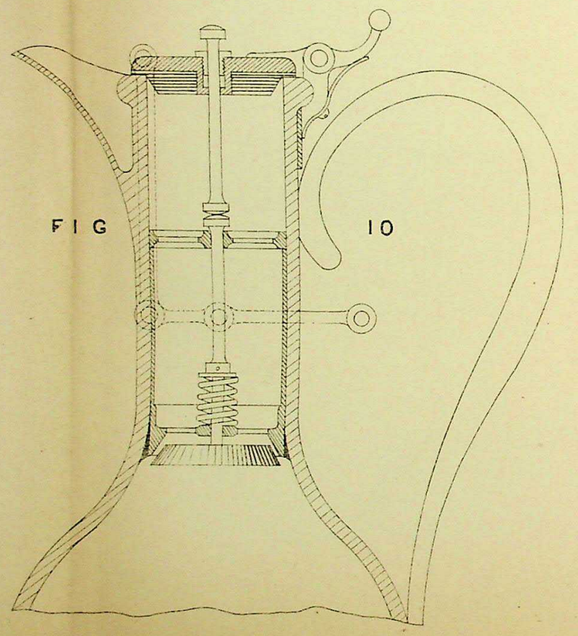


FIG 10

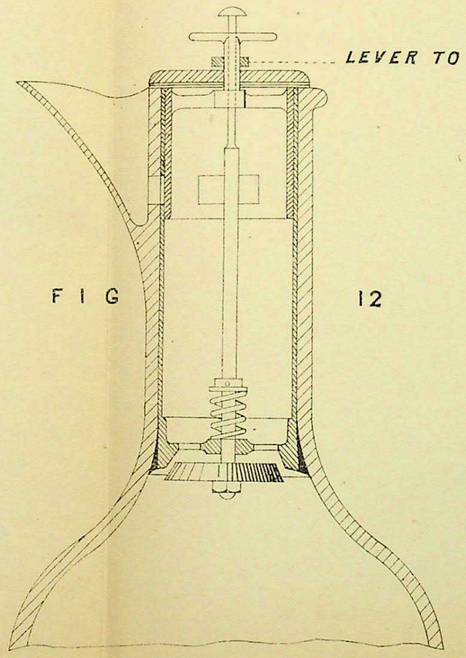



FIG 12

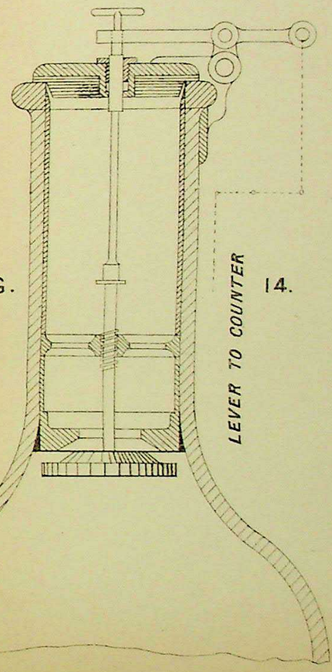



FIG. 14.

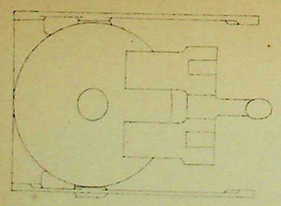


FIG. 11

FIG. 13

FIG. 15



FIG. 19

FIG 7

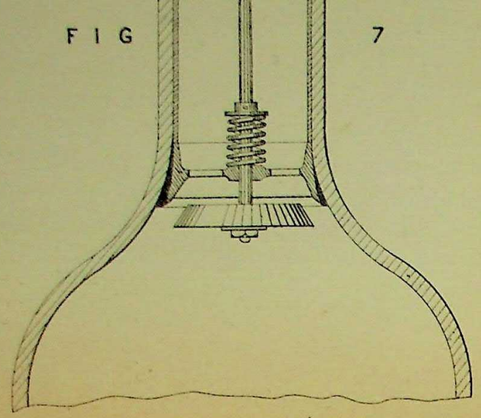
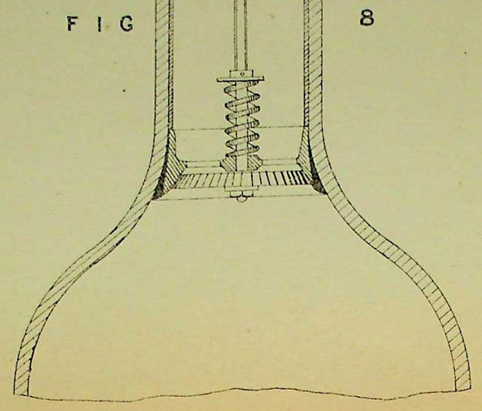
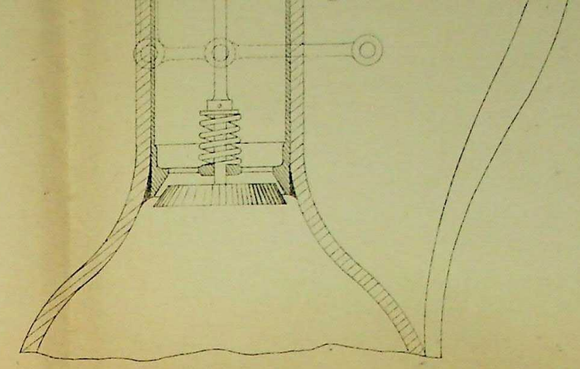


FIG 8





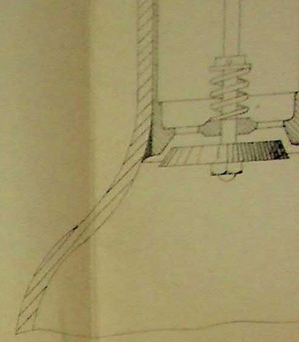
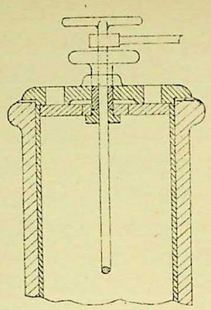


FIG. 16



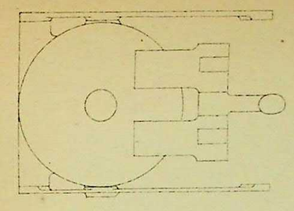


FIG. 11

FIG. 9

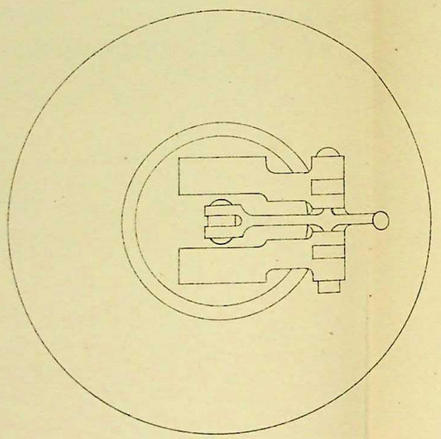


FIG. 13

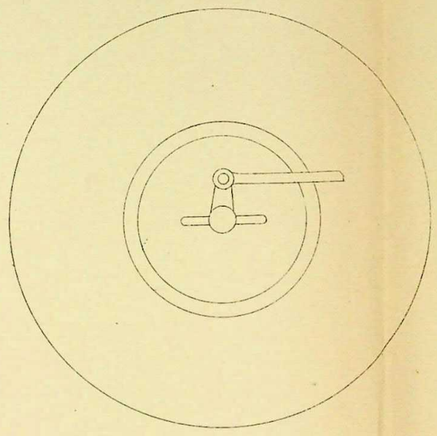


FIG. 15

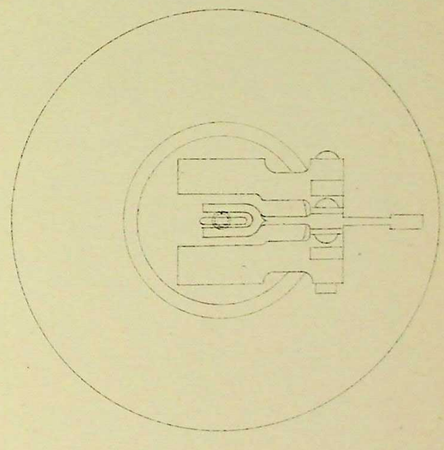
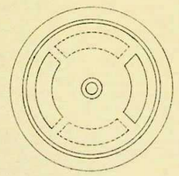


FIG. 17



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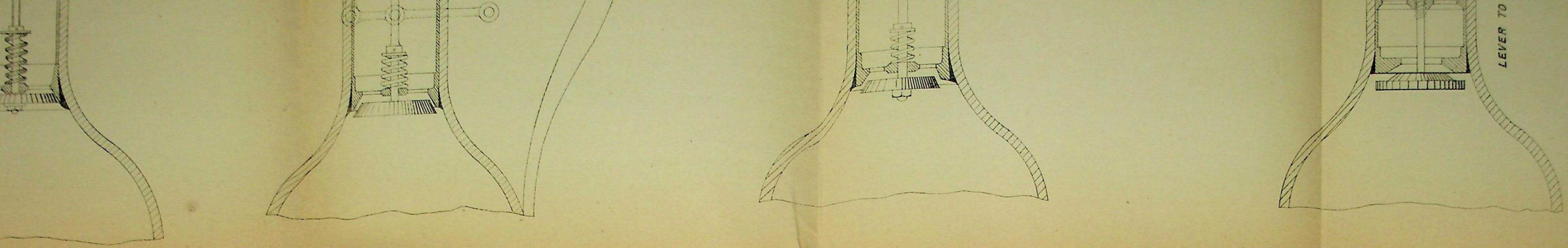


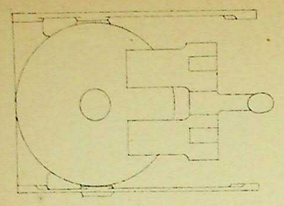



FIG. 11

FIG. 13

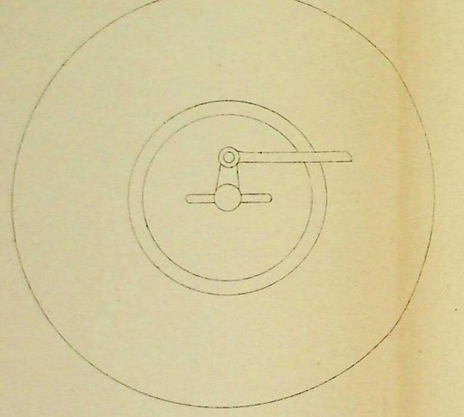


FIG. 15

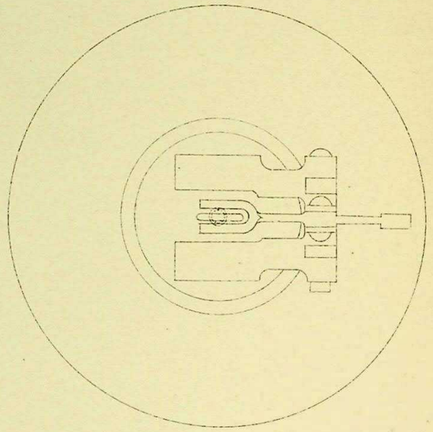
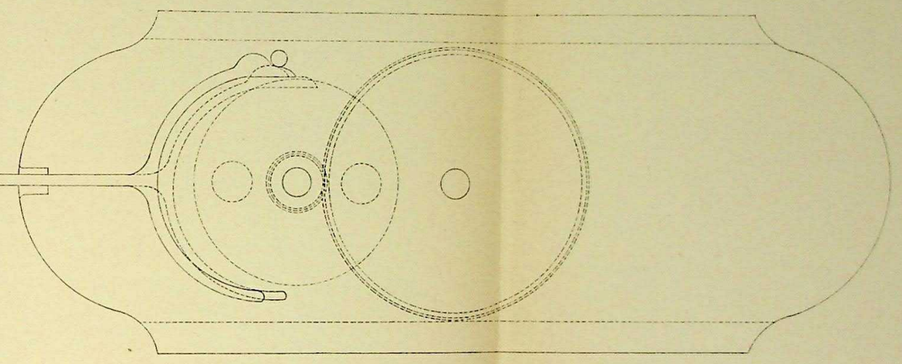
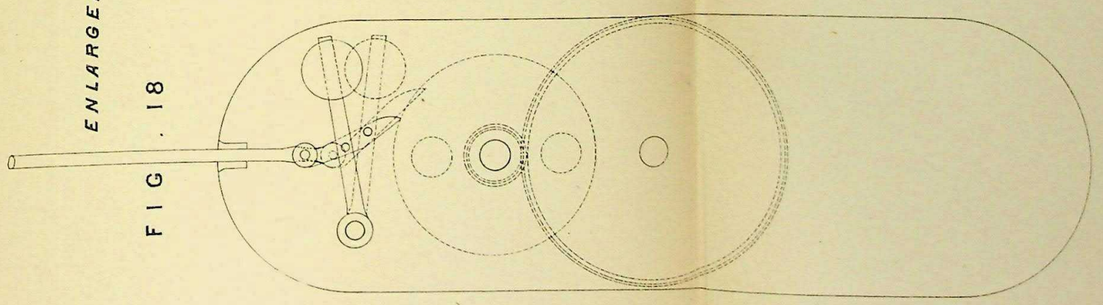


FIG. 19



ENLARGED VIEW OF COUNTER

FIG. 18



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